

AMENDMENTS TO THE CLAIMSIn the Claims

The claims are amended as follows:

- 1        1. (Currently amended) A system for removing organic or organometallic materials
- 2        from an article comprising:
  - 3            an enclosed vacuum reaction chamber constructed and arranged to contain an article
  - 4            having organic or organometallic materials located therein;
  - 5            said enclosed vacuum reaction chamber containing an oxygen-containing gas, wherein
  - 6            the vacuum pressure within said enclosed vacuum reaction chamber is between about 50 mtorr
  - 7            and about 1500 mtorr;
  - 8            means for emitting vacuum ultraviolet rays radiation having a wavelength of about 172
  - 9            nm contained within said enclosed vacuum reaction chamber;
  - 10          wherein said emitted vacuum ultraviolet rays radiation fragment the hydrocarbon bonds
  - 11          in said organic or organometallic materials;
  - 12          wherein said oxygen-containing gas within said enclosed vacuum reaction chamber and
  - 13          said emitted vacuum ultraviolet rays radiation photochemically react to produce ozone and
  - 14          activated oxygen; and
  - 15          wherein said ozone and said activated oxygen react with said fragments of said organic
  - 16          and organometallic materials.
- 1        2. (Currently amended) The system as defined in Claim 1, wherein said means for
- 2        emitting vacuum ultraviolet rays radiation is one or more dielectric barrier discharge lamps.
- 1        3. (Previously presented) The system as defined in Claim 2, wherein said one or
- 2        more dielectric barrier discharge lamps contain xenon gas in an excimer state.

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**AMENDMENTS TO THE CLAIMS**2 **In the Claims**

3 The claims are amended as follows:

4 1. (Currently amended) A system for removing organic or organometallic materials  
5 from an article comprising:6 an enclosed vacuum reaction chamber constructed and arranged to contain an article  
7 having organic or organometallic materials located therein;8 said enclosed vacuum reaction chamber containing an oxygen-containing gas, wherein  
9 the vacuum pressure within said enclosed vacuum reaction chamber is between about 50 mtorr  
10 and about 1500 mtorr;11 means for emitting vacuum ultraviolet rays radiation having a wavelength of about 172  
12 nm contained within said enclosed vacuum reaction chamber;13 wherein said emitted vacuum ultraviolet rays radiation fragment the hydrocarbon bonds  
14 in said organic or organometallic materials;15 wherein said oxygen-containing gas within said enclosed vacuum reaction chamber and  
16 said emitted vacuum ultraviolet rays radiation photochemically react to produce ozone and  
17 activated oxygen; and18 wherein said ozone and said activated oxygen react with said fragments of said organic  
19 and organometallic materials.1 2. (Currently amended) The system as defined in Claim 1, wherein said means for  
2 emitting vacuum ultraviolet rays radiation is one or more dielectric barrier discharge lamps.1 3. (Previously presented) The system as defined in Claim 2, wherein said one or  
2 more dielectric barrier discharge lamps contain xenon gas in an excimer state.

1           4. (Currently amended) A system for removing organic and organometallic  
2 materials from an article comprising:

3           a vacuum reaction chamber in which the vacuum pressure is from about 50 mtorr to 1500  
4 mtorr, said vacuum reaction chamber containing oxygen-containing gas and at least one article  
5 having organic or organometallic materials located thereon;

6           means for emitting vacuum ultraviolet ~~rays~~ radiation having a wavelength of about 172  
7 nm contained within said vacuum reaction chamber;

8           whereby when said vacuum ultraviolet ~~rays~~ radiation are emitted within said vacuum  
9 reaction chamber the hydrogen bonds in said organic or organometallic materials are fragmented  
10 and oxygen-containing gas is broken down to produce ozone and activated oxygen; and

11           said ozone and said activated oxygen combine with said fragmented portions of said  
12 organic and organometallic materials.

1           5. (Currently amended) The system as defined in Claim 4, wherein said means for  
2 emitting vacuum ultraviolet ~~rays~~ radiation is one or more dielectric barrier discharge lamps.

1           6. (Previously presented) The system as defined in Claim 5, wherein said one or  
2 more dielectric barrier discharge lamps contain xenon gas in an excimer state.

1           7. (Currently amended) A method for removing organic or organometallic materials  
2 from an article, said method comprising the steps of:

3           creating a vacuum of about 50 mtorr to about 1500 mtorr in an oxygen-containing gas in  
4 a chamber;

5           placing an article containing organic or organometallic materials in said  
6 oxygen-containing gas within said chamber;

7           irradiating said organic or organometallic materials with vacuum ultraviolet rays  
8   radiation having a wavelength of about 172 nm to induce an intermolecular molecule energy  
9   transfer to said organic or organometallic material, whereby said intermolecular molecule energy  
10   transfer results in a cleaving of at least one of the hydrogen bonds within said organic or  
11   organometallic material;

12           irradiating said oxygen-containing gas to create ozone and activated oxygen; and  
13           allowing said ozone and said activated oxygen to combine with said cleaved portions of  
14   said organic or organometallic material.

1           8. (Previously presented) The method as defined in Claim 7, wherein said ozone  
2   and said activated oxygen are produced by a photochemical reaction.

1           9. (Currently amended) The method as defined in Claim 7, wherein one or more  
2   dielectric barrier discharge lamps are used to produce said vacuum ultraviolet rays radiation.

1           10. (Previously presented) The method as defined in Claim 9, wherein said one or  
2   more dielectric barrier discharge lamps encapsulate xenon gas in an excimer state.

1           11. (Currently amended) An A silicon or quartz article from which organic or  
2   organometallic materials have been removed, said silicon or quartz article being produced by a  
3   process including the steps of:

4           a)       creating a vacuum of about 50 mtorr to about 1500 mtorr in a chamber containing  
5   an oxygen-containing gas;

6           b)       placing an said silicon or quartz article including the organic or organometallic  
7   materials in said chamber;

8           c)     irradiating said organic or organometallic materials and said oxygen-containing  
9     gas within said chamber with vacuum ultraviolet light ~~rays~~ radiation having a wavelength of  
10    about 172 nm; and

11           d)     removing said organic or organometallic materials from said silicon or quartz  
12    article utilizing the ozone and activated oxygen produced in step c).

1           12.    (Currently amended) The silicon or quartz article as defined in Claim 11, wherein  
2    said ozone and said activated oxygen are produced by a photochemical reaction.

1           13.    (Currently amended) The silicon or quartz article as defined in Claim 11 wherein  
2    said step for irradiating said oxygen-containing gas utilizes at least one dielectric barrier  
3    discharge lamp.

1           14.    (Currently amended) The silicon or quartz article as defined in Claim 13 wherein  
2    said one or more dielectric barrier discharge lamps contain xenon gas in an excimer state.

1           15.    (Currently amended) A system for removing the organic or organometallic  
2    material from an article in a dry environment, said system comprising:

3           an enclosed vacuum reaction chamber constructed and arranged to contain an article  
4    having organic or organometallic material on its surface and on its sidewalls;

5           said enclosed vacuum reaction chamber containing an oxygen-containing gas wherein the  
6    vacuum pressure is between about 50 mtorr and about 1500 mtorr;

7           an irradiation device for emitting vacuum ultraviolet ~~rays~~ radiation having a wavelength  
8    of about 172 nm contained within said enclosed vacuum reaction chamber to induce an  
9    intermolecular molecule energy transfer to said organic or organometallic material and to create  
10   ozone and activated oxygen from said oxygen-containing gas; and

11           wherein said ozone and said activated oxygen removes said organic or organometallic  
12   material from said surface and said sidewalls of said article.

1           16. (Currently amended) The system as defined in Claim 15 wherein said irradiation  
2   device is one or more dielectric barrier discharge lamps;\*

1           17. (Previously presented) The system as defined in Claim 16 wherein said one or  
2   more dielectric barrier discharge lamps contains xenon gas in an excimer state.

1           18. (Currently amended) A method for removing the sidewall polymer and  
2   photoresist from an article, said method comprising the steps of:

3           creating a vacuum of about 50 mtorr to about 1500 mtorr in a vacuum reaction chamber;  
4           placing an article having sidewall polymer and photoresist in said vacuum reaction  
5   chamber;

6           irradiating said vacuum reaction chamber with vacuum ultraviolet light rays radiation  
7   having a wavelength of about 172 nm to produce ozone and activated oxygen for removing said  
8   polymer and photoresist from said article.

1           19. (Previously presented) The method as defined in Claim 18 wherein step for  
2   irradiating said vacuum reaction chamber is performed by at least one dielectric barrier discharge  
3   lamp.

1           20. (Previously presented) The method as defined in Claim 19 wherein said dielectric  
2   barrier discharge lamp includes a xenon gas in an excimer state.

1           21. (Canceled)

1           22. (Canceled)

1           23. (Canceled)